I CLAIM:

1. A method for detecting arcing conditions in an alternating current power system having an AC power signal that is decaying or increasing in amplitude, comprising:

averaging the value of at least a portion of a first cycle of an AC power signal;

averaging the value of a similar portion of a second cycle of said AC power signal;

calculating an adjustment factor based on the averaging of said at least portions of said first and second cycles, said adjustment factor having a value to compensate for changes in the amplitude between the first and second cycle portions;

applying said adjustment factor to said second cycle portion to form an adjusted second cycle portion; and

comparing said first cycle portion to said adjusted second cycle portion to determine if there is an arcing signal on said AC power signal.

2. The method of claim 1, further comprising activating an arcing alarm if a dangerous arcing signal is found.

3. The method of claim 1, wherein said power signal is sampled and a digital representation of said power signal is used for said averaging, calculating, applying and comparing.

4. The method of claim 1, wherein said first cycle represents the present cycle of said power signal and said second cycle represents a future cycle of said power signal.

5. The method of claim 1, wherein said adjustment factor comprises a fraction wherein either said first or second cycle averaging is the numerator and the other is the denominator.

6. The method of claim 1, wherein said second cycle is either a past or future cycle of said signal, said adjustment factor applied to said second cycle.

7. A method for detecting electrical arcs in an electrical system having a power signal with a periodically alternating characteristic while reducing or preventing false alarms from decaying/increasing power signal amplitudes, comprising:

detecting past, present and future cycles of a power supply signal;

comparing a region from a present cycle of said signal to a similar region in said past cycle and in said future cycle and making a determination as to which the present cycle would correlate better with for arc monitoring;

adjusting the amplitude of either said past or future cycles to adjust for amplitude decay or increase of said power supply signal;

subtracting the present cycle from either said past or future cycle to form an arc signal artifact waveform; and

analyzing said arc signal artifact waveform to determine if an arcing condition exists.

8. The method of claim 7, wherein said amplitude adjusting comprises calculating an adjustment factor based on the averaging of at least a portion of said

present cycle and the averaging of at least a portion of either said past or future cycles.

9. The method of claim 8, wherein said adjustment factor comprises a fraction having the averaging of said present cycle as the numerator and the averaging of either said past or future cycles as the denominator.

10. The method of claim 8, further comprising generating an alarm if said analyzing said arc signal artifact waveform determines that a dangerous arcing condition exists.

11. A system for detecting electrical arcs by monitoring an alternating current power supply, comprising:

a sampling circuit which samples electrical signals;

a delay circuit which receives said sampling circuit output and stores a time history of said output over an interval including a past, present and future versions of said history;

causal/non-causal logic which compares said present version with said past and future versions to determine which will be used as an arc monitoring version to compare said present version for arc monitoring;

a dynamic processing module to compensate for any amplitude differences between said present version and said arc monitoring version; and

an arc monitoring circuit to analyze said present version and adjusted arc monitoring version to determine if an arc signal is present.

12. The system of claim 11, further comprising an alarm that is activated by said arc monitoring circuit of a dangerous arc signal is found.

13. The system of claim 11, wherein said sampling circuit comprises an analog to digital converter.

14. The system of claim 11, wherein said dynamic processing module calculates an adjustment factor to be applied to said arc monitoring version.

15. The system of claim 14, wherein said adjustment factor comprises a fraction wherein the numerator is the averaging of at least a portion of said present version and the denominator is the averaging of at least a portion of said arc monitoring version.

16. The system of claim 11, wherein said an arc monitoring circuit subtracts either of said present and arc monitoring version from the other.